ATTORNEYS, P.C.

FACSIMILE TRANSMITTAL SHEET

TO:	FROM:
Examiner Aaron N. Strange Group Art 2153	Samuel J. Haidle
COMPANY: USPTO	DATE: 12/6/2005
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☐ URGENT ☒ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Attached please find a Request for Reconsideration with attachments for filing with the United States Patent and Trademark Office in response to the final rejection dated 09/07/2005.

[CLICK HERE AND TYPE RETURN ADDRESS]

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the attached **Request for Reconsideration, copies of the excerpts McGraw-Hill Dictionary Of Scientific And Technical Terms, and Dictionary of Scientific Literacy** are being facsimilied to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, attention **Examiner Aaron N. Strange**, facsimile number **(571) 273-8300**, on this **6th** day of **December, 2005.**

Brenda J. Hughes

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Howard & Howard Docket: 55,270-002

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Andrew R. Osborn et al.
Serial No.:	09/692,852
Group Art No.:	2153
Examiner:	Strange, Aaron N.
Filing Date:	October 20, 2000
For:	DISTRIBUTION MULTIPROCESSING SYSTEM
Attorney Docket No.:	65,270-002

REQUEST FOR RECONSIDERATION

VIA FACSIMILE

Commissioner for Patent
P.O. Box 1450
Alexandria, Virginia 22313-1450

Applicant hereby requests reconsideration of the Official Action mailed on September 7, 2005. In particular, Applicant believes that the Examiner has taken an unreasonable interpretation of the terms "processed information" and "data" as used in the claims. As such, the rejections of the claims are incomplete and should be withdrawn.

Independent method claim 1 includes, in part, the step of "processing information within the first processor of the first node". The "processed information" is addressed, transmitted, received, sent, and stored in subsequent steps. Similarly, independent system claim 19 includes, in part, first and second processors for "processing information". The "processed information" is also stored, assigned an address, transmitted, received, sent, and stored.

Dependent method claim 2 further defines the step of processing information as "creating data within the first processor". Dependent system claim 38 requires "a flow of

data from said sending node to said destination node".

In the Official Action of September 07, 2005, the Examiner rejects claims 1, 2, and 19, among others, as being anticipated by Antonov (U.S. Patent No. 5,884,046). Specifically, the Examiner states:

> "processed information" claimed in claim 1 is anticipated by the messages sent between workstations in the system disclosed by Antonov.

Although not specifically stated, Applicant assumes the Examiner has formulated a similar contention with regard to claim 19. As for claim 2, the Examiner states:

> Antonov further discloses that the step of processing information is further defined as creating data (creating a message) within the first processor (Col 5, Lines 49-53).

The Examiner is therefore interpreting the terms "processed information" and "data", as set forth in the subject application, to be equivalent to the term "messages" as used in Antonov. However, it is unclear from the Official Actions of December 16, 2004 and September 7, 2005 how the Examiner can reasonably interpret "messages" as being equivalent to "processed information" or "data". Applicant respectfully submits that this is an unreasonable interpretation. The following sets forth the standards for which claim terms must be interpreted and a proper interpretation of these terms.

As set forth in Section 2111 of the Manual of Patent Examining Procedure (MPEP), pending claims must be given their broadest reasonable interpretation. Quoting the case of *In re Morris*, Section 2111 states:

> the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification."

Hence, the Examiner must not only apply a *reasonable* interpretation to the claim terms, but the Examiner must also take into account *ordinary usage* and *enlightenment from the specification*.

Further, as set forth in Section 2111.01 of the MPEP, the words of the claim must be given their "plain meaning", which refers to the ordinary and customary meaning of the term by those skilled in the art. Section 2111.01 goes on to state:

> The ordinary and customary meaning of a term may be evidenced by a variety of sources, . . . including: the claims themselves, . . . dictionaries and treatises, . . . and the written description . . .

It is well known in the computer industry that the ordinary and customary meaning of the term "messages" relates to a communication or command for a processor to perform a task, such as requesting data, updating data, invalidating data, etc. In stark contrast, it is well known in the computer industry that the ordinary and customary meaning of the term "processed information" or "data" relates to the data itself, which is typically some type of computational or manipulated data. In fact, Antonov itself recognizes the differences between terminologies. Referring to Col. 5, Lines 49-53, which is the section that the Examiner identifies in the rejections, the term "messages" is used in Antonov for the communications between the nodes or workstations for:

> identifying another workstation computer to which the first workstation computer **intends to send the message**, or indicating a **request for access to** particular **data** contained within the distributed file server storage devices. (emphasis added)

Hence, the term "messages" is for commands and the term "data" in Antonov is for actual numerical data used by the processors for various computations.

The system of the subject patent application does NOT send messages in the typical fashion, i.e., sending a message to retrieve data. In fact, this is a significant difference between the subject invention and prior art systems. As discussed throughout the subject patent application, the subject system sends processed information or data,

but these are NOT messages. Processed information or data is defined in the patent application (see the paragraph spanning Pages 17-18) as information that is processed by proceeding through a number of tasks, which can be any type of calculation, compilation or the like. The processed information is further defined as creating data, such as, for example, obtaining and compiling testing data during the testing of a vehicle. As stated in the first full paragraph on Page 21, the send-only system of the subject invention transports data to desired real memory locations where the data can be used during subsequent processing or evaluation.

It should be noted that the system of the subject invention can send executable code along with the data. The executable code can include messages or commands to instruct processors to process the forwarded data in a certain fashion (see Page 19 as well as claims 4 and 37). Hence, the subject invention can send messages when the messages or commands are embedded in executable code, which is sent along with the processed information or data. Accordingly, the subject invention makes similar differentiations between sent messages and sent processed information or data. As a further deficiency with the Official Action of September 7, 2005, it is improper to correlate the sending of both data and executable code (2 separate items) as claimed with the sending of messages (a single item) as set forth in Antonov. In other words, it is improper to characterize the messages of Antonov as being two different things.

As further evidence, dictionaries include descriptions of the terms "processing" and "data" that are consistent with the above analysis. In particular, referring to the enclosed excerpt from the McGraw-Hill Dictionary of Scientific and Technical Terms, "data" is defined as:

> General term for numbers, letters, symbols, and analog quantities that serve as input for computer processing

and "processing" is defined as:

The act of converting material from one form into another desired form.

Turning to the excerpt from the Dictionary of Scientific Literacy, a Computer is defined as follows:

> an electronic device designed to accept data, perform prescribed computational and logical operations at high speed, and output the results of these operations. (emphasis added)

In accordance with 37 CFR 1.104, an Official Action is to be complete as to all matters. Applicant contends that the Examiner has unreasonably analogized the term "messages", as set forth in Antonov, with "processed information" and "data" as claimed. Also, the Examiner improperly contends that the term "messages" as being both "data" and "executable code" as separately claimed. The Examiner has not provided any explanation for how the "messages" term can be equivalent to "processed information" and "data" or how the "messages" in Antonov can be both "data" and "executable code". As such, the rejections of the claims are improper and/or incomplete and should be withdrawn.

It is respectfully submitted that the subject application is in condition for allowance. Although no fees are believed due, the Commissioner is hereby authorized to charge any fees or credits to Deposit Account No. 08-2789.

Respectfully submitted,

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Date: December 6, 2005

Howard & Howard Docket: 65,270-002

McGraw-Hill Dictionary of Scientific and Technical Terms

Fifth Edition

Sybil P. Parker
Editor in Chief

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mation can be transmitted; in certain signaling systems, both signals can be the same. [prə'sēd tə si'lekt ,sig·nəl]

proceed-to-transmit signal [COMMUN] Signal returned from a distant manual switchboard over the backward signaling path, in response to a calling signal, to indicate that the teleprinter of the distant operator is connected to the circuit. [prə'sēd tə tranz'mit ,sig·nəl]

Procellarian [GEOL] Pertaining to lunar lithologic map units and topographic forms constituting, or closely associated with, the maria. [,prō·sə'lar·ē·ən]

Procellariidae [VERT ZOO] A family of birds in the order Procellariiformes comprising the petrels, fulmars, and shearwaters. [,prō·sə·lə'rī·ə,dē]

Procellariiformes [VERT ZOO] An order of oceanic birds characterized by tubelike nostril openings, webbed feet, dense plumage, compound horny sheath of the bill, and, often, a peculiar musky odor. [,prō·sə·lə,rī·ə'fōr,mēz]

procephalon [INV ZOO] The part of an insect's head that lies anteriorly to the segment in which the mandibles are located. [prō'sef·ə,län]

procercoid [INV ZOO] The solid parasitic larva of certain cestodes, such as pseudophyllideans, that develops in the body of the intermediate host. [prō'sər,kȯid]

process [ANAT] A projection from the central mass of an organism. [COMPUT SCI] To assemble, compile, generate, interpret, compute, and otherwise act on information in a computer. [ENG] A system or series of continuous or regularly occurring actions taking place in a predetermined or planned manner to produce a desired result. ['prä,ses]

process analytical chemistry [ANALY CHEM] A branch of analytical chemistry concerned with quantitative and qualitative information about a chemical process. ['prä,ses ,an·ə'lid·ə·kəl 'kem·ə·strē]

process analyzer [CHEM ENG] An instrument for determining the chemical composition of the substances involved in a chemical process directly, or for measuring the physical parameters indicative of composition. ['prä,ses ,an·ə,līz·ər]

process annealing [MET] Softening a ferrous alloy by heating to a temperature close to but below the lower limit of the transformation range and then cooling. ['prä,ses ə,nēl·iŋ]

process-bound program *See* CPU-bound program. ['prä,ses ,baůnd 'prō·grəm]

process camera [OPTICS] Large camera used to produce materials for reproduction in printing; permits a large range of enlargement and reduction. ['prä,ses ,kam·rə]

process chart [IND ENG] A graphic representation of events occurring during a series of actions or operations. ['prä,ses ,chärt]

process color [GRAPHICS] Method of reproducing full-color originals such as paintings and color photographs; four-color process plates print in yellow, magenta, cyan, and black. ['prä,ses ,kəl·ər]

process control [ENG] Manipulation of the conditions of a process to bring about a desired change in the output characteristics of the process. ['prä,ses kən,trōl]

process control chart [IND ENG] A tabulated graphical arrangement of test results and other pertinent data for each production assembly unit, arranged in chronological sequence for the entire assembly. ['prä,ses kən,trōl ,chärt]

process control engineering [ENG] A field of engineering dealing with ways and means by which conditions of continuous processes are automatically kept as close as possible to desired values or within a required range. ['prä,ses kən,trōl ,en·jə,nir·iŋ]

process control system [CONT SYS] The automatic control of a continuous operation. ['prä,ses kən,trōl ,sis·təm]

process dynamics [ENG] The dynamic response interrelationships between components (units) of a complex system, such as in a chemical process plant. ['prä,ses dī,nam·iks]

process engineering [ENG] A service function of production engineering that involves selection of the processes to be used, determination of the sequence of all operations, and requisition of special tools to make a product. ['prä,ses ,en·jə,nir·iŋ]

process furnace [CHEM ENG] Furnace used to heat process-stream materials (liquids, gases, or solids) in a chemical-plant operation; types are direct-fired, indirect-fired, and pebble heaters. ['prä,ses ,fər·nəs]

process heater [CHEM ENG] Equipment for the heating of chemical process streams (gases, liquids, or solids); usually refers to furnaces, in contrast to heat exchangers. ['prä,ses ,hēd·ər]

process heat reactor [NUCLEO] A nuclear reactor that produces heat for use in manufacturing processes. ['prä,ses 'hēt rē,ak·tər]

processing [COMMUN] Further handling, manipulation, consolidation, compositing, and so on, of information to convert it from one format to another or to reduce it to manageable or intelligible information. [ENG] The act of converting material from one form into another desired form. ['prä,ses·iŋ]

processing interrupt [COMPUT SCI] The interruption of the batch processing mode in a real-time system when live data are entered in the system. ['prä,ses·iŋ ,in·tə,rəpt]

processing program [COMPUT SCI] Any computer program that is not a control program, such as an application program, or a noncontrolling part of the operating system, such as a sort-merge program or language translator. ['prä,ses·iŋ ,prō ,gram]

processing section [COMPUT SCI] The computer unit that does the actual changing of input into output; includes the arithmetic unit and intermediate storage. ['prä,ses·iŋ ,sek·shən]

process lapse rate [METEOROL] The rate of decrease of the temperature of an air parcel as it is lifted, expressed as $-dT/dz$, where z is the altitude, or occasionally dT/dp, where p is pressure; the concept may be applied to other atmospheric variables, such as the process lapse rate of density. ['prä,ses 'laps ,rāt]

process layout [IND ENG] In a processing plant, the layout of machines, equipment, and locations which groups the same or similar operations. ['prä,ses ,lā,aůt]

process lens [OPTICS] A highly corrected, apochromatic lens used for precise color-separation work. ['prä,ses ,lenz]

process-limited *See* processor-limited. ['prä,ses 'lim·əd·əd]

process metallurgy [MET] The branch of metallurgy concerned with the extraction of metals from ore, and with the refining of metals; usually synonymous with extractive metallurgy. ['prä,ses ,med·əl,ərj·ē]

process monitoring [CHEM ENG] The observation of chemical process variables by means of pressure, temperature, flow, and other types of indicators; usually occurs in a central control room. ['prä,ses ,män·ə·triŋ]

processor [COMPUT SCI] 1. A device that performs one or many functions, usually a central processing unit. Also known as engine. 2. A program that transforms some input into some output, such as an assembler, compiler, or linkage editor. ['prä,ses·ər]

processor complex [COMPUT SCI] The central portion of a very large computer consisting of several central processing units working in concert. ['prä,ses·ər ,käm,pleks]

processor error interrupt [COMPUT SCI] The interruption of a computer program because a parity check indicates an error in a word that has been transferred to or within the central processing unit. ['prä,ses·ər 'er·ər ,in·tə,rəpt]

processor-limited [COMPUT SCI] Property of a computer system whose processing time is determined by the speed of its central processing unit rather than by the speed of its peripheral equipment. Also known as process-limited. ['prä,ses·ər ,lim·əd·əd]

processor-memory-switch notation *See* PMS notation. ['prä,ses·ər 'mem·rē ,swich nō,tā·shən]

processor stack pointer [COMPUT SCI] A programmable register used to access all temporary-storage words related to an interrupt-service routine which was halted when a new service routine was called in. ['prä,ses·ər 'stak ,point·ər]

processor status word [COMPUT SCI] A word comprising a set of flag bits and the interrupt-mask status. ['prä,ses·ər 'stad·əs ,wərd]

process piping [ENG] In an industrial facility, pipework whose function is to convey the materials used for the manufacturing processes. ['prä,ses ,pīp·iŋ]

process planning [IND ENG] Determining the conditions necessary to convert material from one state to another. ['prä,ses ,plan·iŋ]

process printing [GRAPHICS] The printing from a series of two or more halftone plates to produce intermediate colors and shades. ['prä,ses ,prin·tiŋ]

process research [IND ENG] Applied research with a view to or improved process in view. ['prä,ses ri,sərch]

process schizophrenia [PSYCH] Schizophrenia having

as a friendly ground environment, either because it is controlled or because the radiating equipment is inoperative. ['därk 'sad·əl]

dark segment [METEOROL] A bluish-gray band appearing above the horizon opposite the rising or setting sun and lying just below the antitwilight arch. Also known as earth's shadow. ['därk ˌseg·mənt]

dark space [ELECTR] A region in a glow discharge that produces little or no light. ['därk ˌspās]

dark spot [ELECTR] A spot on a television receiver tube that results from a spurious signal generated in the television camera tube during retrace, generally from the redistribution of secondary electrons over the mosaic in the tube. ['därk ˌspät]

dark star [ASTRON] A star that is not visible but is a part of a binary star system; in particular, a star which causes, in an eclipsing variable, a primary eclipse. [ˌdärk 'stär]

dark-trace tube [ELECTR] A cathode-ray tube with a bright face that does not necessarily luminesce, on which signals are displayed as dark traces or dark blips where the potassium chloride screen is hit by the electron beam. Also known as skiatron. ['därk ˌträs ˌtüb]

Darling shower [METEOROL] A dust storm caused by cyclonic winds in the vicinity of the River Darling in Australia. ['där·liŋ ˌshau̇·ər]

Darlington amplifier [ELECTR] A current amplifier consisting essentially of two separate transistors and often mounted in a single transistor housing. ['där·liŋ·tən ˌam·plə,fī·ər]

Darrier's disease [MED] A genetically determined disease characterized by patches of papules of the horny layer of skin. Also known as keratosis follicularis. ['dar·ēˌāz dəˌzēz]

d'Arsonval current [ELEC] A current consisting of isolated trains of heavily damped high-frequency oscillations of high voltage and relatively low current, used in diathermy. ['där·sänˌvəl ˌkər·ənt]

d'Arsonval galvanometer [ENG] A galvanometer in which a light coil of wire, suspended from thin copper or gold ribbons, swings in the field of a permanent magnet when current is carried to it through the ribbons; the position of the coil is indicated by a mirror carried on it, which reflects a light beam onto a fixed scale. Also known as light-beam galvanometer. ['därs·ənˌvōl gal·və·nə'mäd·ər]

dart [INV ZOO] A small sclerotized structure ejected from the dart sac of certain snails into the body of another individual as a stimulus before copulation. [därt]

dart configuration [AERO ENG] An aerodynamic configuration in which the control surfaces are at the tail of the vehicle. ['därt kən,fig·yə'rā·shən]

dart leader [GEOPHYS] The leader which, after the first stroke, initiates each succeeding stroke of a composite flash of lightning. Also known as continuous leader. ['därt ˌlēd·ər]

dart sac [INV ZOO] A dart-forming pouch associated with the reproductive system of certain snails. ['därt ˌsak]

darwin [BIOL] A unit of evolutionary rate of change; if some dimension of a part of an animal or plant, or of the whole animal or plant, changes from l_0 to l_t over a time of t years according to the formula $l_t = l_0 \exp(Et/10^6)$, its evolutionary rate of change is equal to E darwins. ['där·wən]

Darwin curve [CRYSTAL] A plot of the intensity of diffracted x-rays from a perfect crystal as a function of angle. ['där·wən ˌkərv]

Darwin-Doodson system [GEOPHYS] A method for predicting tides by expressing them as sums of harmonic functions of time. [ˌdär·wən ˌdüd·ən ˌsis·təm]

Darwin ellipsoids [ASTRON] Ellipsoidal figures of equilibrium of homogeneous bodies moving about each other in circular orbits; calculated by making certain approximations about their mutual tidal influences. ['där·wən ə'lip,zȯidz]

Darwin glass [GEOL] A highly siliceous, vesicular glass shaped in smooth blobs or twisted shreds, found in the Mount Darwin range in western Tasmania. Also known as queenstownite. ['där·wən ˌglas]

Darwinism [BIOL] The theory of the origin and perpetuation of new species based on natural selection of those offspring best adapted to their environment because of genetic variation and consequent vigor. Also known as Darwin's theory. ['där·wəˌnizəm]

Darwin's finch [VERT ZOO] A bird of the subfamily Fringillidae; Darwin studied the variation of these birds and used his data as evidence for his theory of evolution by natural selection. [ˌdär·winz 'finch]

Darwin's theory *See* Darwinism. [ˌdär·winz 'thē·ə·rē]

Darwinulacea [INV ZOO] A small superfamily of nonmarine, parthenogenetic ostracods in the suborder Podocopa. [ˌdär,win·yə'lā·sē·ə]

Darzen's procedure [ORG CHEM] Preparation of alkyl halides by refluxing a molecule of an alcohol with a molecule of thionyl chloride in the presence of a molecule of pyridine. ['där·zənz prə,sē·jər]

Darzen's reaction [ORG CHEM] Condensation of aldehydes and ketones with α-haloesters to produce glycidic esters. ['där·zənz rē,ak·shən]

Dasyatidae [VERT ZOO] The stingrays, a family of modern sharks in the batoid group having a narrow tail with a single poisonous spine. [ˌdā·sē'ad·əˌdē]

Dascillidae [INV ZOO] The soft-bodied plant beetles, a family of coleopteran insects in the superfamily Dascilloidea. [ˌdə'sil·əˌdē]

Dascilloidea [INV ZOO] Superfamily of coleopteran insects in the suborder Polyphaga. [ˌdas·ə'lȯid·ē·ə]

DASD *See* direct-access storage device. ['daz,dē]

dasheen [BOT] *Colocasia esculenta*. A plant in the order Arales, grown for its edible corm. [da'shēn]

dashkesanite [MINERAL] $(Na,K)Ca_2(Fe,Mg)_5(Si,Al)_8O_{22}Cl_2$ A monoclinic mineral of the amphibole group consisting of a chloroaluminosilicate of sodium, potassium, iron, and magnesium. [ˌdash·kə'sa,nīt]

dashpot [MECH ENG] A device used to dampen and control a motion, in which an attached piston is loosely fitted to move slowly in a cylinder containing oil. ['dash,pät]

Dasycladaceae [BOT] A family of green algae in the order Dasycladales comprising plants formed of a central stem from which whorls of branches develop. [ˌdas·ə·klə'dā·sē,ē]

Dasycladales [BOT] An order of lime-encrusted marine algae in the division Chlorophyta, characterized by a thallus composed of nonseptate, highly branched tubes. [ˌdas·ə·klə'dā·lēz]

dasymeter [PHYS] A thin glass globe used to measure the density of gas by weighing the globe in the gas. [da'sim·əd·ər]

Dasyonygidae [INV ZOO] A family of biting lice, order Mallophaga, that are confined to rodents of the family Procaviidae. [ˌdas·ē·ə'nij·əˌdē]

Dasypodidae [VERT ZOO] The armadillos, a family of edentate mammals in the infraorder Cingulata. [ˌdas·ə'päd·əˌdē]

Dasytidae [INV ZOO] An equivalent name for Melyridae. [də'tid·əˌdē]

Dasyuridae [VERT ZOO] A family of mammals in the order Marsupialia characterized by five toes on each hindfoot. [ˌdas·ē'yu̇r·əˌdē]

Dasyuroidea [VERT ZOO] A superfamily of marsupial mammals. [ˌdas·ē·yə'rȯid·ē·ə]

DAT *See* digital audio tape.

data [COMPUT SCI] 1. General term for numbers, letters, symbols, and analog quantities that serve as input for computer processing. 2. Any representations of characters or analog quantities to which meaning, if not information, may be assigned. [SCI TECH] Numerical or qualitative values derived from scientific experiments. ['dad·ə, 'dād·ə, or 'däd·ə]

data acquisition [COMMUN] The phase of data handling that begins with the sensing of variables and ends with a magnetic recording or other record of raw data; may include a complete radio telemetering link. ['dad·ə ˌak·wə,zish·ən]

data acquisition computer [COMPUT SCI] A computer that is used to acquire and analyze data generated by instruments. ['dad·ə ˌak·wə,zish·ən kəm'pyüd·ər]

data aggregate [COMPUT SCI] The set of data items within a record. ['dad·ə ˌag·rə·gət]

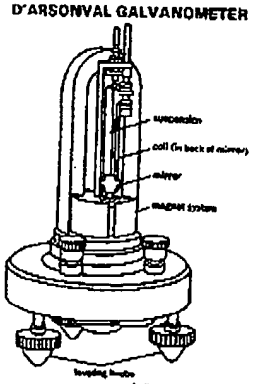
data analysis [COMPUT SCI] The evaluation of digital data. ['dad·ə ə,nal·ə·səs]

data attribute [COMPUT SCI] A characteristic of a block of data, such as the type of representation used or the length in characters. ['dad·ə ˌa·trə'byüt]

data automation [COMPUT SCI] The use of electronic, electromechanical, or mechanical equipment and associated techniques to automatically record, communicate, and process data and to present the resultant information. [ˌdad·ə ȯd·ə'mā·shən]

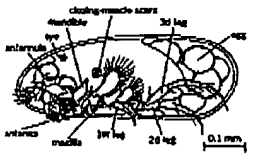
data bank [COMPUT SCI] A complete collection of information

D'ARSONVAL GALVANOMETER



Drawing of d'Arsonval galvanometer. *(From D. M. Considine, ed., Process Instruments and Control Handbook, McGraw-Hill, 1957)*

DARWINULACEA



Darwinula stevensoni.

Dictionary of Scientific Literacy

Richard P. Brennan

Wiley Science Editions
John Wiley & Sons, Inc.
New York ■ Chichester ■ Brisbane ■ Toronto ■ Singapore

semicir-
s large—
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vaporizes the icy material and the resulting vapor and dust help to form the glowing tails visible in the skies above Earth. Astronomers estimate that there are 100 billion of these objects, ranging in size from 0.5 to 5 miles in diameter residing in a region of outer space beyond PLUTO called the OORT CLOUD.

In 1985–86, an international fleet of five spacecraft flew by and made a close-up examination of Halley's Comet when it made its periodic (about every 77 years) visit. The fleet included two Russian Vegas, two Japanese probes, and one from the European Space Agency. These spacecraft analyzed the cometary grains that they encountered and determined that the basic chemistry of some of these particles are hydrogen, carbon, nitrogen, and oxygen—the same chemicals you and I are made of. It has been postulated that comets that hit Earth when it was formed may have brought these chemicals with them, which helped—or even triggered—the formation of life. To the chagrin of U.S. scientists, NASA, due to budgetary restrictions, did not participate in this important space research.

If budgetary approval is obtained, NASA plans to launch a mission called CRAF (Comet Rendezvous Asteroid Flyby) in 1996. The spacecraft will spend five years in space before meeting with the Kopff comet and dropping a probe to its surface. The probe is designed to penetrate the core of the comet and study the chemistry of its material, which may date from the beginning of the solar system. See ASTEROIDS, and METEOROIDS, METEORS, AND METEORITES.

Compounds Substances containing ATOMS of two or more different ELEMENTS in definite proportion. (See diagram on page 56.) Chemical bonds hold the elements together. Examples: The compound water (H_2O) contains atoms from HYDROGEN and OXYGEN, and the compound CARBON DIOXIDE (CO_2) is made up of carbon and oxygen. See CHEMICAL BONDING.

Computer A machine that manipulates the symbols of information such as numbers and letters. Essentially a collection of on/off switches, a computer can be described as an electronic device designed to accept data, perform prescribed computational and logical operations at high speed, and output the results of these operations.